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PATENT SPECIFICATION



Application Date : April 20, 1925. No. 10,241 / 25.

252,516

Complete Left: Jan. 19, 1926.

Complete Accepted: June 3, 1926.

PROVISIONAL SPECIFICATION.

Improvements in Joints and Couplings for Pipes and Tubes.

I, ERNEST ROBINSON, of Royal Aircraft Establishment, South Farnborough, Hampshire, British subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in joints and couplings for pipes and tubes, and more particularly to an improved type of flexible joint for petrol pipes or the like for use on aircraft or other places, where the joints are subjected to vibration.

In the ordinary form of olive joint with a flexible tubular jointing material, the olive fits into the flared ends of the pipes to be joined, but this construction has certain disadvantages in use, inter alia, in that the inner surface of the flexible jointing material is inadequately protected or is liable to be injured while fitting the joint or otherwise.

According to the present invention, a flexible joint or coupling for metal pipes or tubes comprises grooved collars or the equivalent fixed on each pipe near its end to be joined, a cylindrical metal sleeve of less external diameter than the grooved collars and loosely fitting on the respective pipe ends to be joined between the collars so that the extremities of the pipes are spaced apart, a liquid tight tube length of flexible material fitting over the collars and loosely fitting the sleeve, and means for clamping the ends of the flexible tube tightly around the collars.

The collars may consist of coils of wire having the convolutions close together. The coils of wire may be wound around the pipes, or they may be previously wound on a mandril of slightly less diameter than the pipes and afterwards sprung into position on the pipes to obtain a better fit thereon. Alternatively, the collars may consist of grooved cylinders, the grooves being

arranged helically or normal to the axis of the collars. The collars may be fixed on the pipes by being sweated or soldered thereon. When helical coils of wire are used or cylinders having helical grooves are used, the grooves are preferably closed at their ends.

The improved construction of joint has a small but sufficient degree of flexibility to withstand fracture due to vibration, and at the same time is free from the defects of the ordinary olive joint above referred to.

One form of construction is illustrated by way of example in the accompanying drawings, in which:—

Fig. 1 is a perspective view of the assembled joint; and

Fig. 2 is a similar view showing the parts of the joint displayed.

In the form of construction shown, the two lengths of pipe 1, 2 to be joined have coils of metal wire 3, 4 sweated in position near the ends. These coils are of short length and a space of short length is allowed between the end of each coil and the end of the pipe length on which it is mounted. The coils may be wound on the pipe, or sprung thereon as aforesaid, and soldered in position. The actual length of the coils is determined by the type of pipe clip employed, hereinafter referred to, and should be long enough to give a good bearing for the clip.

The pipe ends are connected by a plain metal sleeve 5, which is of slightly less external diameter than the coil, and of slightly greater internal diameter than the outside diameter of the pipe lengths. By this arrangement flexibility of the joint is secured.

Extending over the coils 3, 4 and the sleeve 5 is located a length of jointing material 6, consisting of petrol resisting rubber tubing or other suitable material

according to the fluid which the pipes are intended to conduct. The ends of the jointing material 6, are clamped in position on the coils 3, 4 by means of pipe clips 7, 8, which may be of any suitable design for gripping the jointing material into the grooves of the coils 3, 4. When the pipe clips are tightened, the jointing material is held firmly down into the grooves of the coils.

The wire forming the coils is of such a diameter that, when wound in position on the pipe ends, the outer surface of the coil is an easy sliding fit within the flexible jointing material 6.

Dated this 9th day of April, 1925.

A. C. DAY,

Captain,

Agent for the Applicant.

COMPLETE SPECIFICATION.

Improvements in Joints and Couplings for Pipes and Tubes.

I, ERNEST ROBINSON, of Royal Aircraft Establishment, South Farnborough, Hampshire, British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in joints and couplings for pipes and tubes, and more particularly to an improved type of flexible joint for petrol pipes or the like for use on aircraft or other places, where the joints are subjected to vibration.

According to the present invention, a flexible joint or coupling for metal pipes or tubes comprises grooved collars or the equivalent fixed on each pipe near its end to be joined, a cylindrical rigid metal sleeve of less external diameter than the grooved collars and loosely fitting on the respective pipe ends to be joined between the collars so that the extremities of the pipes are spaced apart, a liquid tight tube of flexible material fitting over the collars and loosely fitting the sleeve, and means for clamping the ends of the flexible tube tightly around the collars.

The collars may consist of coils of wire having the convolutions close together. The coils of wire may be wound around the pipes, or they may be previously wound on a mandril of slightly less diameter than the pipes and afterwards sprung into position on the pipes to obtain a better fit thereon. Alternatively, the collars may consist of grooved cylinders, the grooves being arranged helically or normal to the axis of the collars. The collars may be fixed on the pipes by being sweated or soldered thereon. When helical coils of wire are used, the grooves are preferably closed at their ends.

The improved construction of joint has a small but sufficient degree of flexibility to withstand fracture due to vibration, and at the same time protects from injury the inner surface of the tubular jointing material.

One form of construction is illustrated by way of example in the drawings left with my provisional specification, in which:—

Fig. 1 is a view showing the parts of the joint displayed; and

Fig. 2 is a perspective view of the assembled joint.

In the form of construction shown, the two lengths of pipe 1, 2 to be joined have coils of metal wire 3, 4 sweated in position near the ends. These coils are of short length and a space of short length is allowed between the outer end of each coil and the extremity of the pipe length on which it is mounted. The coils may be wound on the pipe, or sprung thereon as aforesaid, and soldered in position. The actual length of the coils is determined by the type of pipe clip employed, hereinafter referred to, and should be long enough to give a good bearing for the clip.

The pipe ends are connected by a plain metal sleeve 5, which is of slightly less external diameter than the coil, and of slightly greater internal diameter than the outside diameter of the pipe lengths. By this arrangement flexibility of the joint is secured.

Extending over the coils 3, 4 and the sleeve 5 is located a length of jointing material 6, consisting of petrol resisting rubber tubing or other suitable material according to the fluid which the pipes are intended to conduct. The ends of the jointing material 6, are clamped in position on the coils 3, 4 by means of pipe clips 7, 8, which may be of any suitable design for gripping the jointing material into the grooves of the coils 3,

4. When the pipe clips are tightened, the jointing material is held firmly down into the grooves of the coils.

5 The wire forming the coils is of such a diameter that, when wound in position on the pipe ends, the outer surface of the coil is an easy sliding fit within the flexible jointing material 6.

10 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

15 1. A flexible joint or coupling for metal pipes or tubes comprising grooved collars or the equivalent fixed on each pipe near its end to be joined, a cylindrical rigid metal sleeve of less external diameter than the grooved collars and
2 loosely fitting on the respective pipe ends

to be joined between the collars so that the extremities of the pipes are spaced apart, a liquid tight flexible tube fitting over the collars and loosely fitting the sleeve, and means for clamping the ends 25 of the flexible tube tightly around the collars.

2. A flexible joint or coupling as claimed in Claim 1, wherein the collars consist of coils of wire having the convolutions close together. 30

3. A flexible joint or coupling for metal pipes or tubes constructed substantially as described or as shown in the drawings left with my provisional specification. 35

Dated this 4th day of January, 1926.

A. O. DAY,

Captain,

Agent for the Applicant. 40

[This Drawing is a reproduction of the Original on a reduced scale.]

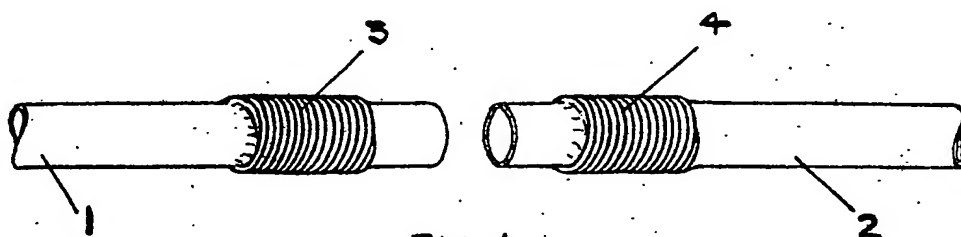


FIG. 1.

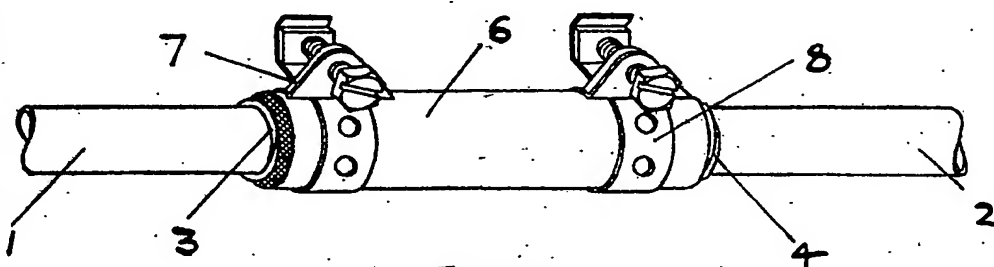
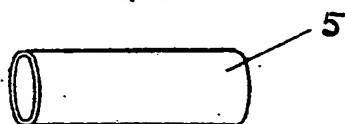


FIG. 2.